



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VP-420, VP-421
PC/HD Scaler

P/N: 2900-000506 Rev 5

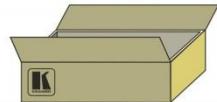


VP-420, VP-421 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- | | |
|---|---|
| <input checked="" type="checkbox"/> VP-420 and/or VP-421 PC/HD Scaler | <input checked="" type="checkbox"/> 4 Rubber feet each |
| <input checked="" type="checkbox"/> 1 Power supply each (5V DC) | <input checked="" type="checkbox"/> 1 Quick Start sheet |



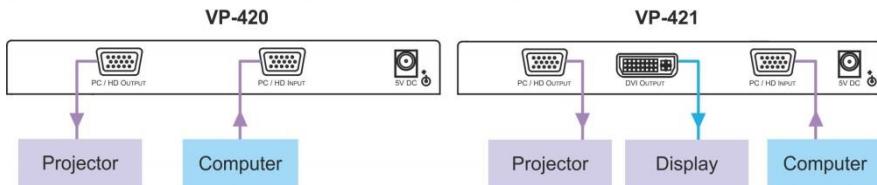
Save the original box and packaging materials in case you need to return your VP-420, VP-421 for service.

Step 2: Install the VP-420, VP-421

Attach the rubber feet and place on a table or mount the VP-420, VP-421 in a rack (using an optional RK-T2B rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your VP-420, VP-421.



Always use Kramer high-performance cables for connecting AV equipment to the VP-420, VP-421.

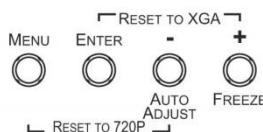
Step 4: Connect the power

Connect the 5V DC power adapter to the VP-420, VP-421 and plug the adapter into the mains electricity.



Step 5: Operate the VP-420, VP-421

Set parameters using the front panel buttons.



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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Products.

Congratulations on purchasing your **VP-420**, **VP-421 PC/HD Scaler**, which is ideal for the following typical applications:

- Projection systems in conference rooms, boardrooms, auditoriums, hotels and churches, production studios, rental and staging
- Home theater up-scaling

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VP-420**, **VP-421** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions



Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

3 Overview

The Kramer **VP-420**, **VP-421** are high-performance digital scalers for computer graphics and HDTV signals. They up- or down-scale computer graphics and HDTV signals to resolutions up to WUXGA and 1080p. The following output resolutions are supported:

PC: VGA, SVGA, XGA, 1280x800, SXGA, UXGA, WXGA, SXGA+, WXGA+, WSXGA, WUXGA,

COMPONENT: 480p, 576p, 720p @50/60Hz, 1080i @50/60Hz, 1080p @50/60Hz.

The **VP-420**, **VP-421** also feature:

- An On-Screen Display (OSD) for easy setup and adjustment, accessible via the front-panel buttons
- A built-in ProcAmp for convenient signal adjustment
- A non-volatile memory that retains the last settings used
- Quick auto-adjust
- A freeze button
- RGBHV or component video input and/or output

The **VP-421** is identical to the **VP-420** with the addition of a DVI output port.

The machines are fed from an external 5V DC source, making them suitable for field operation.

Operate your **VP-420**, **VP-421/VP-421** directly via the front panel push buttons and the on-screen display (OSD).

3.1 Defining the VP-420 PC/HD Scaler

This section defines the **VP-420**.

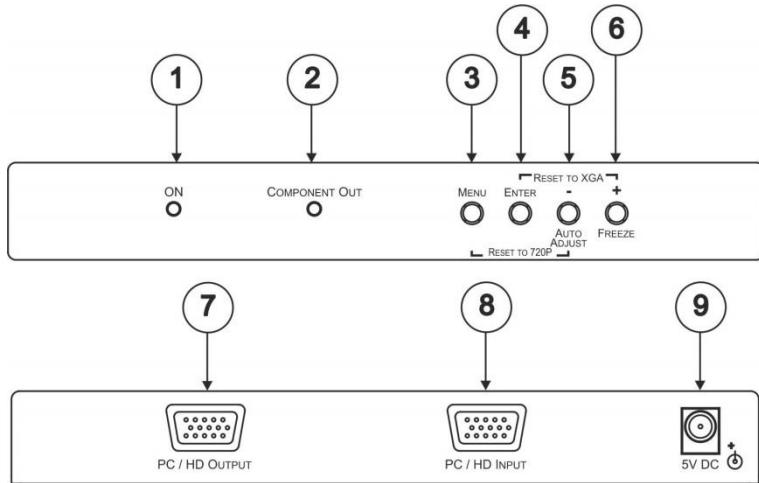


Figure 1: VP-420 PC/HD Scaler

#	Feature	Function
1	ON LED	Lights when the unit is powered on
2	COMPONENT OUT LED	Lights when component video is output
3	MENU button	Press to enter/escape the on-screen display (OSD) menu. Press together with the – button to reset to 720p
4	ENTER button	In OSD, press to choose the highlighted menu item. Press together with the + button to reset to XGA
5	- / AUTO ADJUST button	In OSD, press to move backward through the list or to decrement the parameter value. When not in OSD, press to automatically adjust the picture to fit the display
6	+ / FREEZE button	In OSD, press to move forward through the list or to increment the parameter value. When not in OSD, press to freeze the display
7	PC / HD OUTPUT 15-pin HD connector	Connects to computer graphics or HDTV acceptor
8	PC / HD INPUT 15-pin HD connector	Connects to computer graphics or HDTV source
9	5V DC	+5V DC connector for powering the unit

3.2 Defining the VP-421 PC/HD Scaler

This section defines the VP-421.

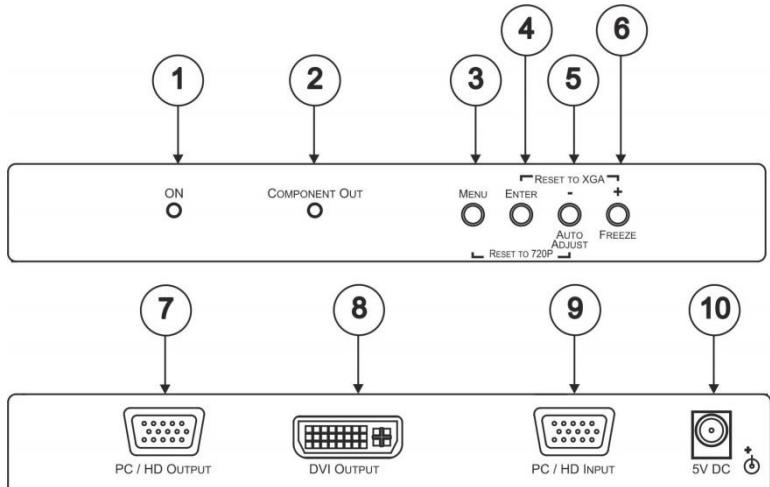


Figure 2: VP-421 PC/HD Scaler

#	Feature	Function
1	ON LED	Lights when the unit is powered on
2	COMPONENT OUT LED	Lights when component video is output
3	MENU button	Press to view the on-screen display (OSD) menu. Press together with the – button to reset the display to 720p resolution
4	ENTER button	In OSD, press to choose the highlighted menu item. Press together with the + button to reset to XGA
5	- / AUTO ADJUST button	In OSD, press to move backward through the list or to decrement the parameter value. When not in OSD, press to automatically adjust the picture to fit the display
6	+ / FREEZE button	In OSD, press to move forward through the list or to increment the parameter value. When not in OSD, press to freeze the display
7	PC / HD OUTPUT 15-pin HD connector	Connects to computer graphics or HDTV acceptor
8	DVI OUTPUT DVI connector	Connects to DVI acceptor
9	PC / HD INPUT 15-pin HD connector	Connects to computer graphics or HDTV source
10	5V DC	+5V DC connector for powering the unit

4 Connecting the VP-420, VP-421



Always switch off the power to each device before connecting it to your **VP-420**, **VP-421**. After connecting your **VP-420**, **VP-421**, connect its power and then switch on the power to each device.

To connect the **VP-420**, **VP-421** as illustrated in the example in [Figure 3](#):

1. Connect a computer graphics or HDTV source to the PC/HD INPUT 15-pin HD connector.
2. Connect to the PC/HD OUTPUT 15-pin HD connector to a computer graphics or HDTV acceptor as follows:
 - When connecting to an XGA acceptor (RGBHV), connect to the acceptor's XGA connector
 - When connecting to a component acceptor (YPbPr), connect as shown here:

PIN #	Signal
1	Pr
2	Y
3	Pb
6, 7, 8	Ground

3. If connecting a **VP-421**, connect the DVI OUTPUT to a DVI acceptor. The VP-421 outputs on both the 15-pin HD connector and the DVI connector. You can connect to either output or to both of them simultaneously.
4. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 3](#)).

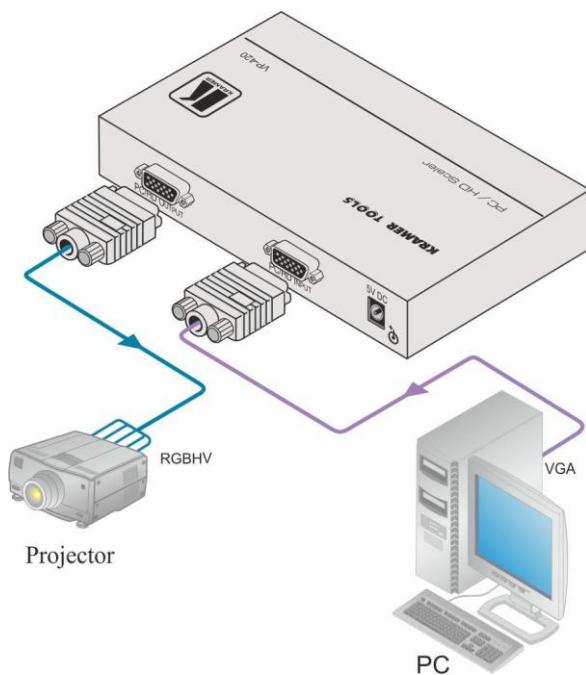


Figure 3: Connecting the VP-420 PC/HD Scaler

5 Operating the VP-420, VP-421

The **VP-420, VP-421** is operated directly via the front panel buttons, and via the OSD menu (see [Section 5.2](#)).

5.1 Using the Front Panel Buttons

During normal operation (without the OSD), the front panel buttons perform the following functions:

- Pressing MENU opens the on-screen display (OSD) main menu (see [Section 5.2](#)), the next press closes the OSD
- Pressing +/FREEZE freezes the display, the next press unfreezes the display
- Pressing – /AUTO ADJUST automatically centers the display
- Pressing MENU and –/AUTO ADJUST together resets the display to 720p and the COMPONENT OUT LED lights
- Pressing +/FREEZE and ENTER together resets the display to XGA and the COMPONENT OUT LED turns off

5.2 Using the OSD

You can use the OSD to set a wide variety of parameters. When the MENU button is pressed, the main menu opens allowing access to all the device settings (see [Section 5.2.2](#)).

When setting FINETUNE, COLOR, SIZE, OUTPUT (see [Section 5.2.3](#)), and OSD (see [Section 5.2.4](#)) a submenu opens with the applicable parameters.

5.2.1 Using the Front Panel Buttons

While the OSD is open, the front panel buttons perform the following functions:

- Pressing + and – move forward and backward through the menu items and increment or decrement the parameter values
- Pressing ENTER selects and activates a menu item or accepts the parameter value set

- Pressing MENU closes the OSD menu

The menu times out by default after 10 seconds. To change the OSD display time, adjust the OSD/TIMER parameter.

As an example of setting parameters, to increase the contrast on the display:

1. From normal operation, press MENU.

The OSD main menu appears on the screen.

2. Press the + or – button to highlight CONTRAST.

CONTRAST changes to green when highlighted.

3. Press ENTER.

The contrast value parameter changes to red.

4. Press the + button to increase the value (increase the contrast) or the – button to decrease the value (decrease the contrast).

The value ranges from 0 to 100.

5. Press ENTER to set the value.

The contrast value parameter changes back to white.

6. To return to normal operation, highlight EXIT and press ENTER, press MENU, or wait until the menu times out.

5.2.2 The MAIN MENU

The following table defines the MAIN MENU parameters and functions.

Parameter	Function
CONTRAST	Adjusts the contrast
BRIGHTNESS	Adjusts the brightness
FINETUNE	Adjusts the other ProcAmp parameters, for example, hue, sharpness, noise reduction, and so on
COLOR	Adjusts the color of the display – RED, GREEN, BLUE
SIZE	Select the size of the display: LETTER BOX, PANSCAN, FULL, OVERSCAN, and two underscan settings: UNDER 1 and UNDER 2
OUTPUT	Sets the output resolution (see Section 5.2.3)
OSD	Adjusts parameters of the on-screen display (see Section 5.2.4)
FACTORY RESET	Resets the device to its factory default parameters and automatically senses the input and output devices
INFORMATION	Displays the source, input and output resolutions and the software version
EXIT	Select to exit the OSD

5.2.3 The “OUTPUT” Submenu

The “OUTPUT” submenu allows you to choose the output resolution sent to the display. Each press of the + or – button cycles through the list of resolutions.

The following table defines the resolutions available on the “OUTPUT” submenu and how they appear on the display.

Parameter	Appears As	Parameter	Appears As
VGA	640x480	WUXGA	1920x1200
SVGA	800x600	480P	480p
XGA	1024x768	576P	576p
1280x800	1280x800	720P50	720p @50Hz
SXGA	1280x1024	720P60	720p @60Hz
UXGA	1600x1200	1080P50	1080p @50Hz
WXGA	1366x768	1080P60	1080p @60Hz
SXGA+	1400x1050	1080p (RGBHV) (appears in the Menu as 1080PRGB)	1920x1080
WXGA+	1440x900	1080I50	1080i @50Hz
WSXGA	1680x1050	1080I60	1080i @60Hz

5.2.4 The “OSD” Submenu

The “OSD” submenu allows you to adjust the location of the OSD, the length of time it is displayed, and the darkness of its background.

Parameter	Function	Range	Default
H-POSITION	Adjusts the horizontal position of the OSD on the screen	0–100	50
V-POSITION	Adjusts the vertical position of the OSD on the screen	0–100	50
TIMER	Adjusts the length of time in seconds the OSD appears on the screen	0–100	10
BACKGROUND	Adjusts the shade of the OSD background from black to transparent	0–8	4
EXIT	Select to exit to the Main Menu		

6 Technical Specifications

INPUTS:	1 PC/HD on a 15-pin HD connector, RGBHV/YPbPr
OUTPUT:	1 PC/HD on a 15-pin HD connector, RGBHV/YPbPr; 1 DVI on a DVI connector (VP-421 only)
OUTPUT RESOLUTIONS:	PC: VGA, SVGA, XGA, 1280x800, SXGA, UXGA, WXGA, SXGA+, WXGA+, WSXGA, WUXGA, COMPONENT: 480p, 576p, 720p @50/60Hz, 1080i @50/60Hz, 1080p @50/60Hz All resolutions are outputted @ 60Hz, except where noted
OUTPUT REFRESH RATE:	60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions
PROCESSING DELAY:	3 frames
CONTROLS:	Front panel buttons, ON and COMPONENT OUTPUT LEDs
POWER CONSUMPTION:	5V DC, 800mA (VP-420), 1A (VP-421)
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	19cm x 13.5cm x 2.5cm (7.5" x 5.3" x 0.98") W, D, H
WEIGHT:	0.66kg (1.45lbs) approx.
ACCESSORIES:	Power supply
OPTIONS:	19" rack adapter
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-000506



Rev: 5